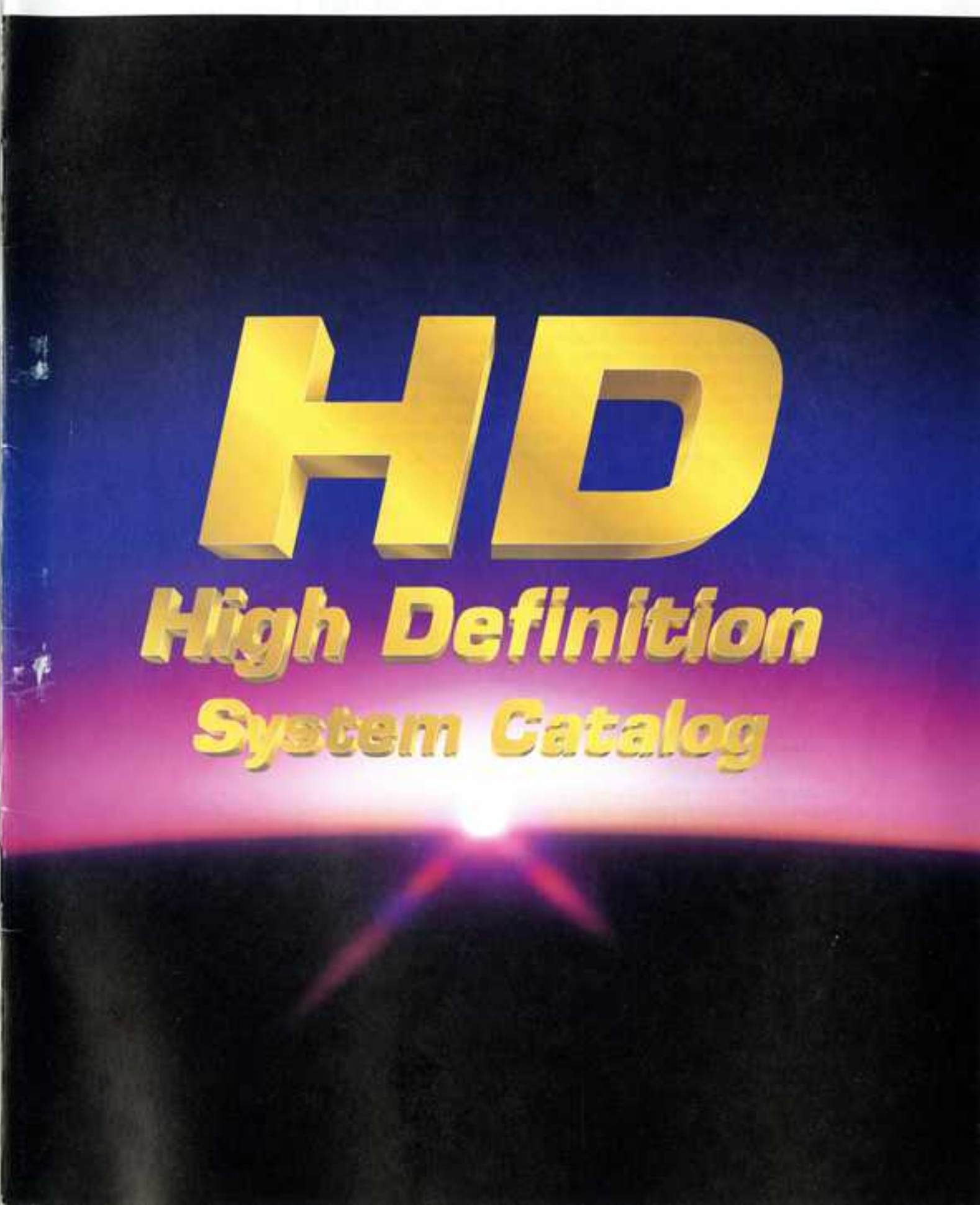
Panasonic

High Definition System '96/3

HD General Catalog



With Panasonic's Help, You Can Build an Easy-to-Use HD System Offering Powerful Communication and Extra Viewing Fun

The HD (high-definition) age is now upon us, and high-quality HD images are showing up all around the world. Applications are no longer limited to the Hi-Vision systems seen in art galleries and museums. Already, HD technology is being used to produce promotional videos of cities and even small communities, and to make videos explaining a building's attractions or facilities. In education, HD and multimedia systems are teaming up to create exciting new learning environments that children really enjoy.
HD technology also plays an increasingly key role in the Hi-Vision images provided in MUSE-system broadcasts and packaged software. And its importance continues to grow in many new, high-quality image applications involving personal computers and multimedia.

In-house production of HD software is on the rise all over Japan. Rather than relying on commercially available HD images, more and more users are creating their own HD software and configuring HD systems tailored to their specific needs.
Panasonic provides full support in designing, installing and managing HD systems. As industry leaders, we draw on a wide variety of HD equipment and a wealth of know-how backed by extensive HD experience. Let us know what kind of system you want, or how you plan to use your system.
With Panasonic on your side, you benefit from an easy-to-use HD system that offers richly expressive images, powerful communication, and greater viewing fun. And with Panasonic, you're assured of a high-quality system that perfectly suits your needs.

Image Database System with Zone Zooming
Hi-Vision Multimedia System
HD Hall Presentation System
Hi-Vision Studio System
HD Hall Presentation System

Superior Realism, Flexible Configuration, Compatible with Multimedia/Database — HD Systems for Every Need

HD Still Picture System

A single compact magneto-optical disc stores an amount of data equivalent to about 1,500 still pictures. Art and other museums can have "Hi-Vision galleries" in which visitors view HD images of the artworks they have in storage. Travel agencies can use HD images to promote sightseeing spots and places of interest, or to show customers possible accommodations or other information. You can even configure interactive information or guidance systems that let people, using HD-image retrieval functions, select the images or information they want to see. And HD still picture databases have opened the door to exciting new information service possibilities, with virtually unlimited application potential.

Already used in many art galleries and museums, Panasonic HD Still Picture Systems have created a new way to enjoy art.

▲Shiga Prefecture Modern Art Museum

<Designing a system: Basic requirements and key points>

Screen size

The size of the audience is the key factor in determining screen size. In selecting the most suitable display device, it's first necessary to determine whether the viewing room is dark or relatively bright.

Software

Select the software according to the images, audience and purpose. Equipment compatibility is an important factor when renting software; if you want to produce your own software in-house, you'll have to consider purchasing a software production system.

* Panasonic HD Still Picture Systems are compatible with software being produced by the Hi-Vision Museum Promotion Association.

Hardware configuration

A variety of systems can be configured using a base that includes a still picture processor and video and audio disc drives. Depending on the images and display environment, it's possible to configure systems that offer features such as the following:

- Interactive program (or image) selection
- Compatibility with personal computers running multimedia applications
- Automatic repeat showing of multiple programs
- Expandability to a moving-picture playback system

Expandability

Panasonic's flexible system designs support a variety of expansion possibilities. In-house software production systems, Hi-Vision multimedia systems, and image database systems with zone zooming all can be arranged.

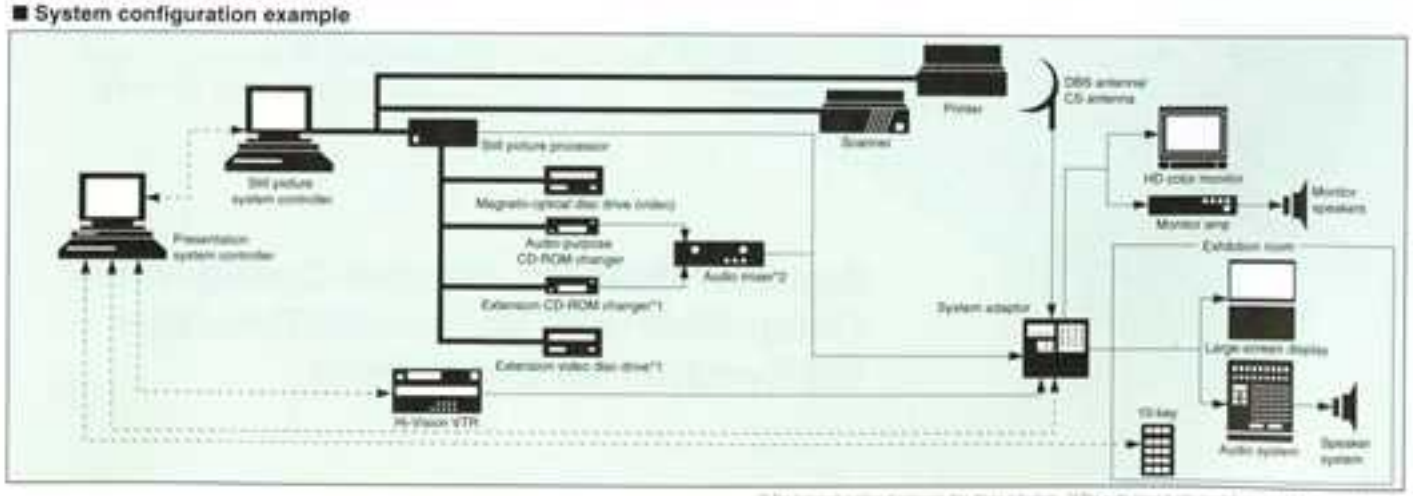
< Installation examples >

▲Doshisha University

▲Hyogo Prefecture Ki-no Denbi

▲Matsue City Lifetime Learning Center

■ **System configuration example**



*1 The maximum number of extension disc drives is fourteen. *2 The audio mixer is only needed when adding an audio disc drive.

From image editing to sound recording — easy production of original software

In-House Software Production System

This type of system lets you produce your own original software for HD Still Picture systems. A menu-based operating system assures ease of use. Simple mouse movements control a series of production operations, from inputting source images to editing and recording. Composing an image display is as easy as cutting and pasting photos, while special effect functions give images a professional look. You can also create original CDs with narration and soundtracks. A number of companies in Japan are already using Panasonic systems to create original software.

▲Basic configuration of an in-house software production system. This type of desktop system is both compact and easy to use.

<Basic steps in software production>

1 Inputting of source materials
A camera or scanner is used to input images to a magneto-optical disc. Text can also be input.

2 Image processing
Using the mouse, images are easily edited while viewing them on-screen.

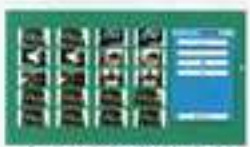
3 Scenario editing
The edited images are arranged in order, display times are set, and effects such as cut and dissolve are added.

4 Soundtrack production
A microphone and mixer are used to record a narration and soundtrack onto a CD.
* Microphone, mixer and CD production equipment are optional.

5 Final check
The entire program is played back as a check. Images are re-edited or reprocessed as necessary.

Examples of screens

▲ **Menu screen**
The menus and mouse assure easy operation.



Selection of base image

Image processing menu

Text input

Saving the image

(Examples of source materials)

Using a camera or VTR inputs

- Sculptures, 3-dimensional structures
- Sightseeing spots
- Artwork

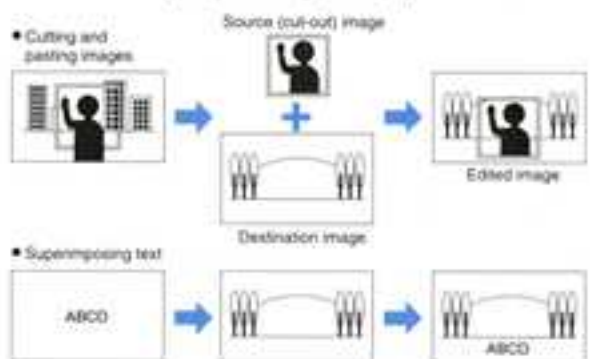
* Panasonic's optional AD board allows input of still images from moving pictures shot with an HD camera. (The AD board is to be mounted in the still picture processor.)
† Compatible with photo CDs. (Optional Photoshop Plugin is required.)

Photoshop is a registered trademark of Adobe Systems Incorporated.

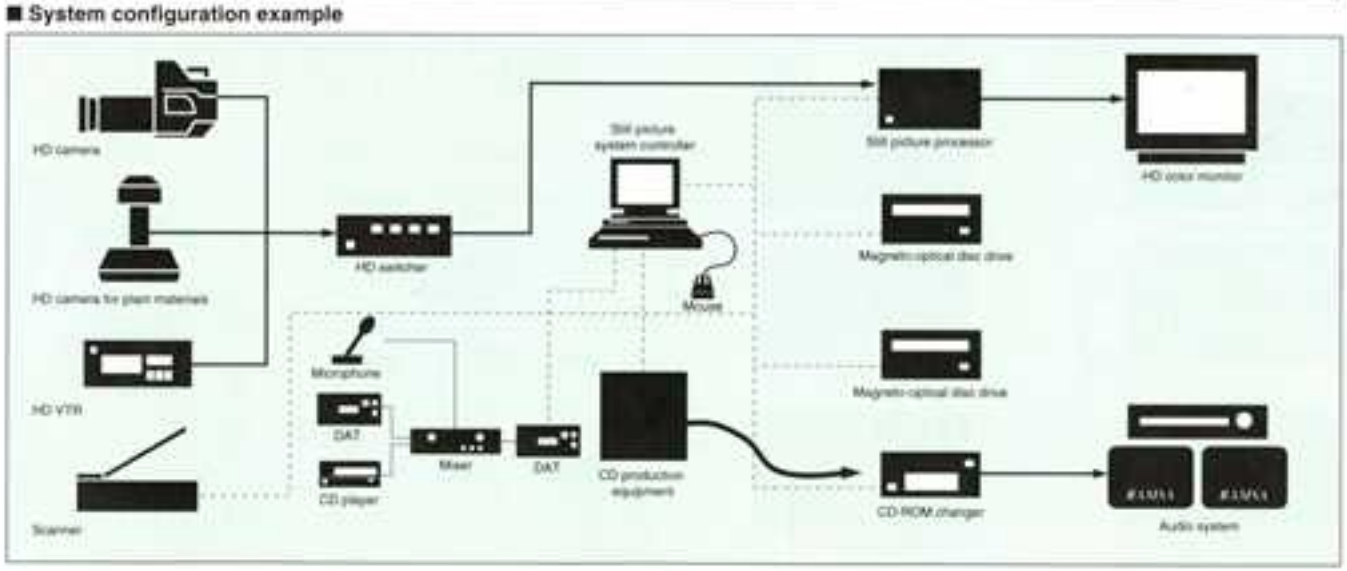
Using scanner inputs

- Photos
- Printed materials
- Text documents

(Image editing example)



■ **System configuration example**



Using a Hi-Vision screen to display text and images from a personal computer

Hi-Vision Multimedia System

This type of system can take the contents of a computer screen — text, graphics and even moving pictures — and display them in a window on a Hi-Vision screen. HD still images can be displayed on-screen at the same time, creating an interactive multimedia environment that serves as a fun and stimulating educational tool for children. By combining the creative powers of a personal computer with the viewing advantages of a high-definition, high-density Hi-Vision screen, this system represents a new style of learning environment that's well suited to the multimedia age.

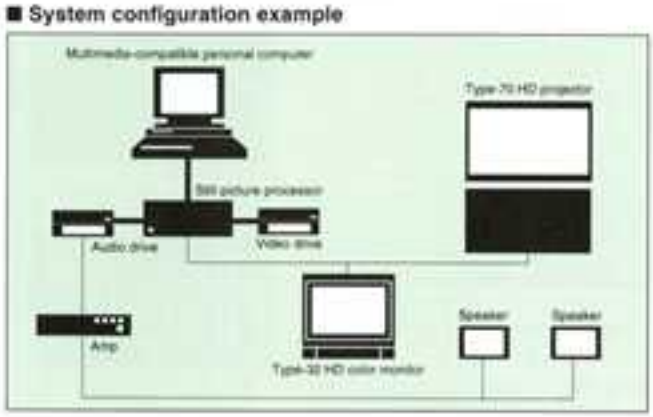
- A scan converter board converts personal computer signals to Hi-Vision signals. (The scan converter board is to be mounted in the still picture processor. Only one board can be mounted at a time.)
- The images and sound can be controlled from the personal computer.

Software: Set of three CD-ROMs (one each for images, sound and control)
Personal computer operating environment: Windows 3.1
(Please inquire about compatible PCs.)
* Windows 3.1 is a registered trademark of Microsoft Corporation.

Hi-Vision interactive educational software
"Voyage Around the Earth"

Based on NHK Publishing's "Voyage Around the Earth", this multimedia software includes striking photos and illustrations of nature and the earth. Viewers can freely select the images they want to see, making this a fun, stimulating and interactive way to learn about our natural world.

■ System configuration example



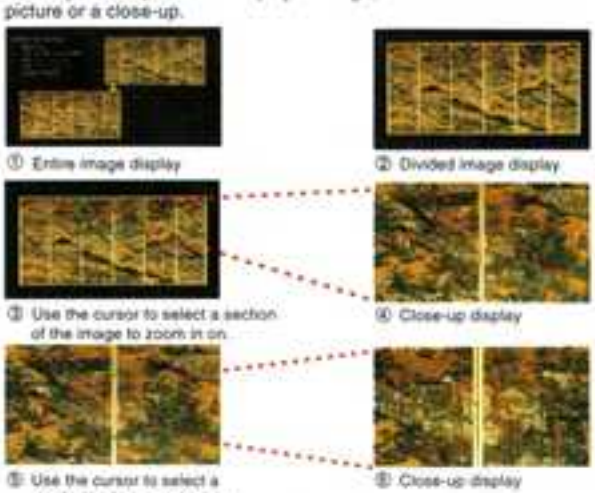
Instant close-ups of any part of an image

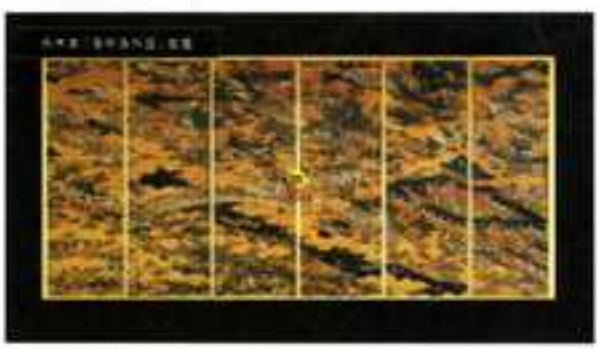
Image Database System with Zone Zooming

This type of interactive database system provides an innovative new feature: It lets users zoom in for an instant close-up of any part of an image, or pull back to view the image as a whole. This is ideal, for example, when viewing artwork. The viewer can get a conventional look at an art piece by viewing it whole on a single screen, and then zoom in to any part of the piece to study a particular detail. The zooming function has the same effect as bringing your face up close to the artwork.

- Uses a linked-image database system in which each image is divided into multiple files.
- For any particular image, it is also possible to display supplementary information and play back a narration and soundtrack.
- Image close-ups can be scrolled vertically and horizontally around the screen.

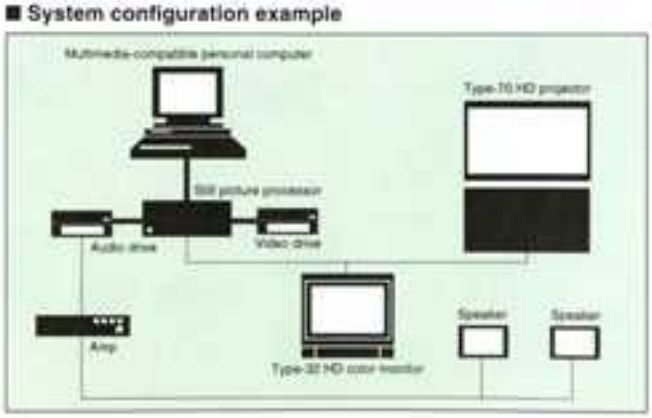
<Image arrangement system>
It's easy to manipulate the displayed image, whether it's an entire picture or a close-up.


① Entire image display
② Divided image display
③ Use the cursor to select a section of the image to zoom in on.
④ Close-up display
⑤ Use the cursor to select a section for further zooming.
⑥ Close-up display



▲ The image above is from "Funaki-bon rakuchu rakugai illustrations," demonstration software developed jointly by Matsushita Electric Industrial Co., Ltd. and Tokyo Hi-Vision Co., Ltd.
(Select the "in" on the screen to display the text and start the narration.)

■ System configuration example



Retrieves high-quality HD images for viewing in individual booths

HD Database System

This type of HD system can display HD still images of archived artwork and related academic information stored on a database. Users in individual booths can search for, retrieve and view the images. The images and other information can be easily produced and managed by the facility's administrators. Connection to a LAN is required, and the system provides a GUI (graphic user interface) environment that makes it easy for users to access the information they wish to view. In art galleries, for example, this system offers an interactive environment that takes full advantage of high-quality HD images.

An expanding network environment

HD database systems can be extended beyond in-house LANs to connect, via telephone lines, with systems in other museums and research institutions. A large, nationwide network can be set up this way. These systems can also connect to external networks — such as the Internet — for even larger-scale information exchange.

■ System outline

These systems consist of a server that stores the HD still images and related information, and booths for viewing the images.

Database server
Digital images of artwork are stored and managed on the server, along with related information. These images and information can be accessed from any booth connected to the LAN. The system provides a great service for visitors, and also can be used by museum administrators to convey information to the staff.

Main functions: image storage, image management, image conversion, printing, security management

Playback booth
This system provides an effective private viewing environment. In individual booths, users can perform simple mouse operations to search for and view images from software being developed by the Hi-Vision Museum Promotion Association and original software produced in-house. Narration and soundtracks can be played back at the same time.

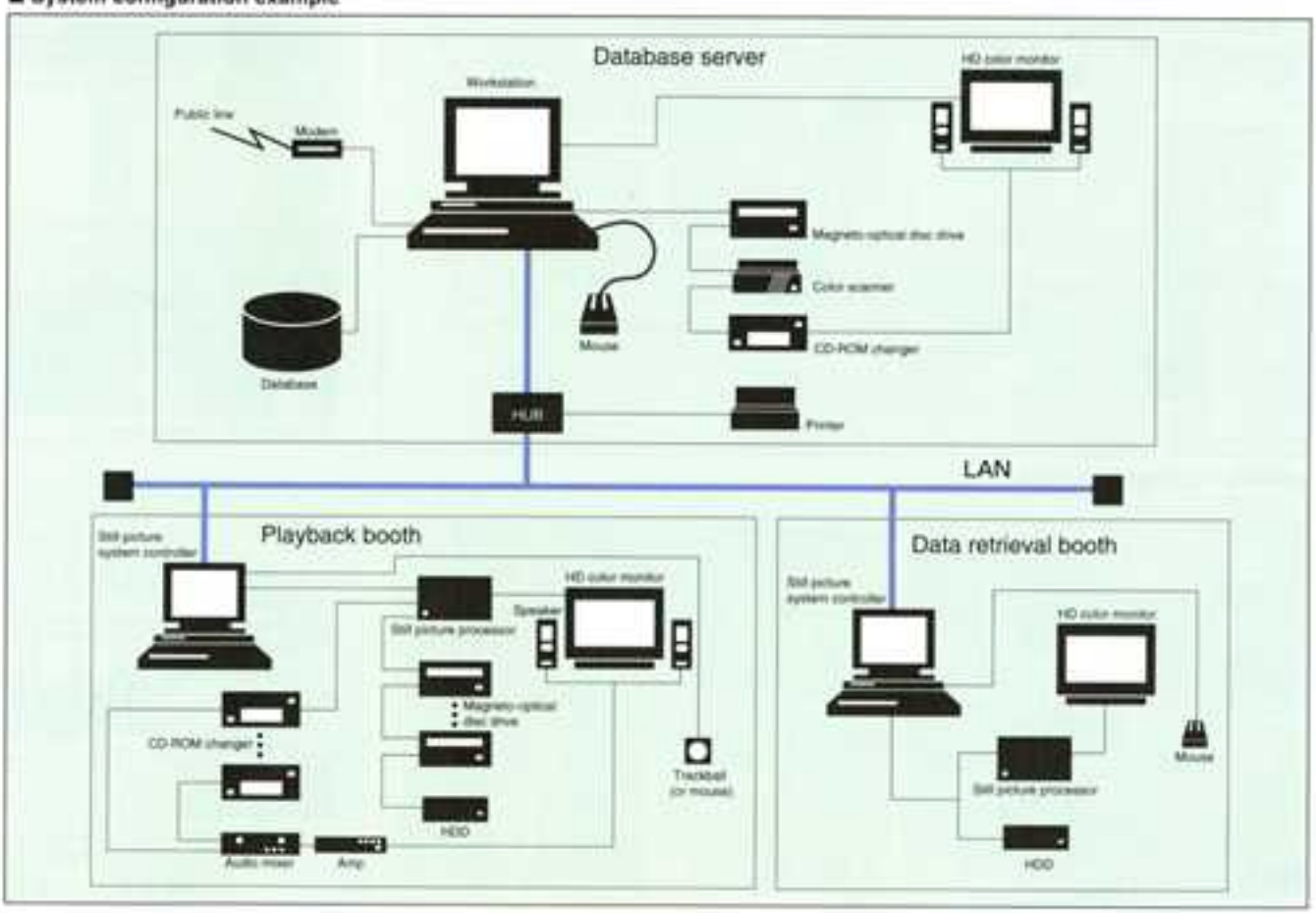
Main functions: program playback, retrieval and playback, automatic display, presentation playback

LAN

Data retrieval booth
With simple mouse operations, users can search for images and related information using the name of the artwork or certain clues, such as the artist's name, the category of art or a date. New or revised data can be added to the database server at any time; since the booths are connected on-line to the server, users always have access to the most up-to-date images and information.

Main functions: data retrieval, high-speed HD image display, automatic operation, image browsing

■ System configuration example



HD Hall Presentation System

This type of system makes it easy to display beautiful HD images in a hall or other event space. No special knowledge or techniques are required, and systems can be configured in a variety of ways. These systems are suitable for image presentations and showing of HD video software in event halls and other large spaces. They can serve as low-cost, space-saving mini-theaters and cinema complexes. Many facilities have already installed HD Hall Presentation Systems and are taking advantage of the exciting, high-impact, true-to-life visuals.
Panasonic can provide comprehensive support in creating a presentation facility, including everything from visual and audio equipment and software to total design and management.

Kashiba City's Futakami Cultural Center (Nara Prefecture)
Equipped with a type-230 cinema system, this hall uses HD software to provide information to the public.

<Designing a system: Basic requirements and key points>

Screen size

The size of the hall is the key factor in determining screen size. Panasonic offers a wide range of screens — from a compact integrated system, to a type-300 6-tube system, to a multi-screen system. We can also provide a sound system that's ideal for a particular space.

■ Screen size and audience size

Screen	Hall size*	Capacity
Type 70	5 × 5 m	40 persons
Type 110	8 × 8 m	90 persons
Type 150	11.5 × 11.5 m	150 persons
Type 200	15 × 15 m	230 persons
Type 250	18.5 × 18.5 m	350 persons
Type 300	22.5 × 22.5 m	500 persons

* The above figures (estimates only) apply to square-shaped facilities.

Software and source equipment

First determine what types of software will be used, then select the source equipment accordingly. While existing software can be used, you should also consider producing original software to make your HD hall unique and give it a special, original appeal. Panasonic provides total consulting and support services in both hardware and software.

Expandability

Installation of Panasonic's System Adaptor allows control of a variety of source devices, for venues in which adaptability to multiple sources is desired. Installation of a scan converter allows the system to display images and text from a personal computer.

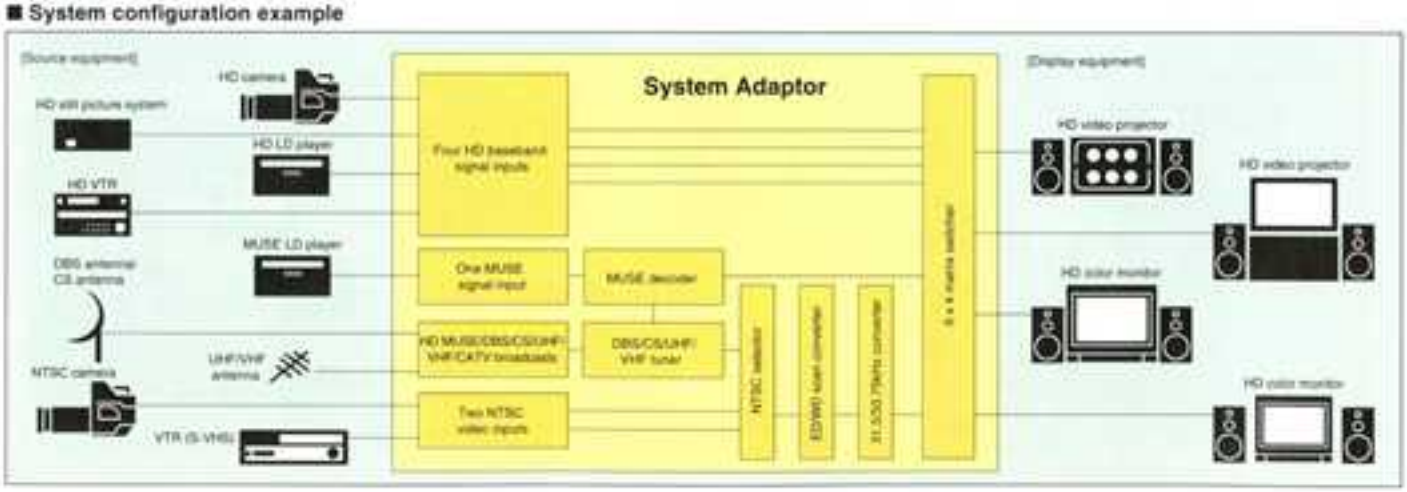
<Installation examples>

▲ Sendai International Center

▲ Iwafune District Educational Information Center

▲ Asia-Pacific Trade Center

■ System configuration example



Automatic HD systems that are ideal for movie theaters -- easy-to-use units save space, cut costs

HD Cinema System

HD Cinema Systems offer a variety of useful functions, including long, continuous program operation and automatic control over many theater operations. With use of videotapes, these highly automated systems allow a single operator to run the entire theater.

▲ Use of the world-renowned RAMSA pro audio system assures excellent sound quality.

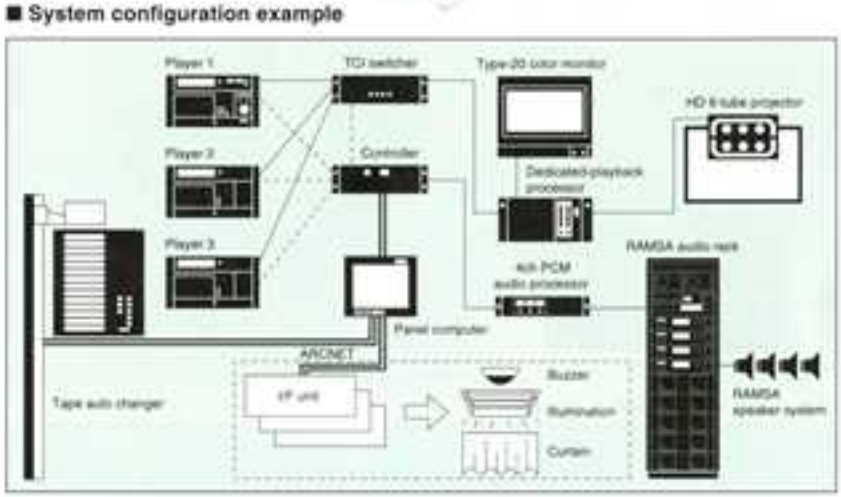
▲ The Hi-Vision dedicated-playback video deck, audio processor and TCI switcher can mount on a rack. The panel computer makes it easy to set the system for automatic operation.

▲ The 6-tube HD projector delivers exceptionally clear, bright images.

- Main components can be mounted in a rack to save space and reduce costs.
- The time code recorded on a tape is used for automatic tape changeover. Automatic continuous playback allows even a long movie to be shown.
- The program playback function allows automatic showing of up to six movies at set times.
- The tape auto-changer provides fully automatic operation for up to 14 tapes.
- With an optional expansion interface unit, the system can also provide automatic control over lighting, the opening buzzer, curtain operation and other theater functions.

▲ The tape auto-changer system handles up to 14 tapes.

■ **System configuration example**



For a dynamic, three-dimensional HD image experience

3D HD Image System

This type of system uses a 6-tube or 12-tube projector system, with left-eye/right-eye polarizing filters on the lenses. The viewer wears 3D glasses. Used with 3D video software, these systems generate HD images that are stunningly lifelike and have extraordinary depth.

Hi-Vision Studio System

New 2/3" 2-million-pixel MFIT-CCD camera captures beautiful Hi-Vision images

Hi-Vision Acquisition System

A newly developed 2/3" 2-million-pixel MFIT-CCD camera makes it easier than ever to shoot and record Hi-Vision moving pictures. The camera unit is compact, lightweight, easy to focus and easy to use, and it delivers images of outstanding quality. Panasonic also offers a studio adaptor and studio equipment. Ideal for both field recording and studio recording, this advanced Hi-Vision Acquisition System represents a great new way to create Hi-Vision programs.

▲ The superior image quality and mobility of Panasonic's field recording system have earned the praise of Japan's NHK, which uses it for Hi-Vision recording.

Compact, lightweight and self-contained system with low power consumption

Field Recording System

The system combines a Hi-Vision camera (including camera head, camera adaptor and 1.9-inch viewfinder) with a lightweight Hi-Vision portable VTR powered by a battery pack. Compact, lightweight and self-contained, it offers the portability and mobility needed for ideal outdoor Hi-Vision recording.

Incorporating an RGB full-digital-processing CCU

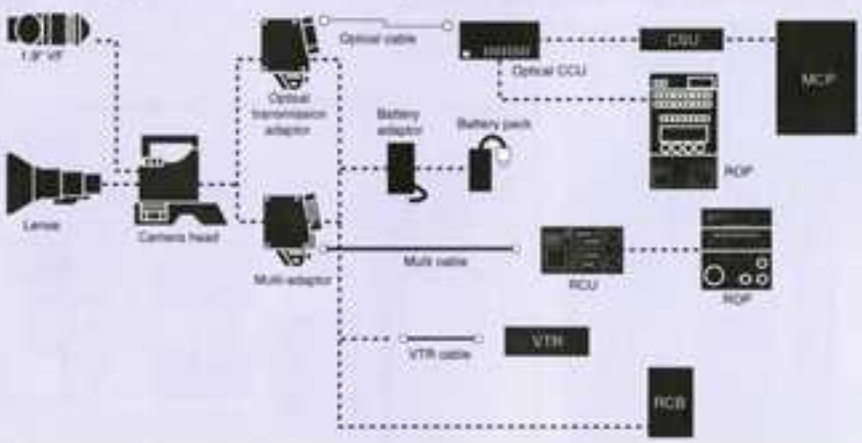
EFT Production System

This basic system comprises a Hi-Vision camera and CCU, which are connected via optical cable for serial digital signal transmission. A dedicated LSI digitally processes the signals after the CCU circuit, resulting in superior image quality, high reliability and functions rivaling those of studio cameras. Other advantages include minimal space requirements and low costs.

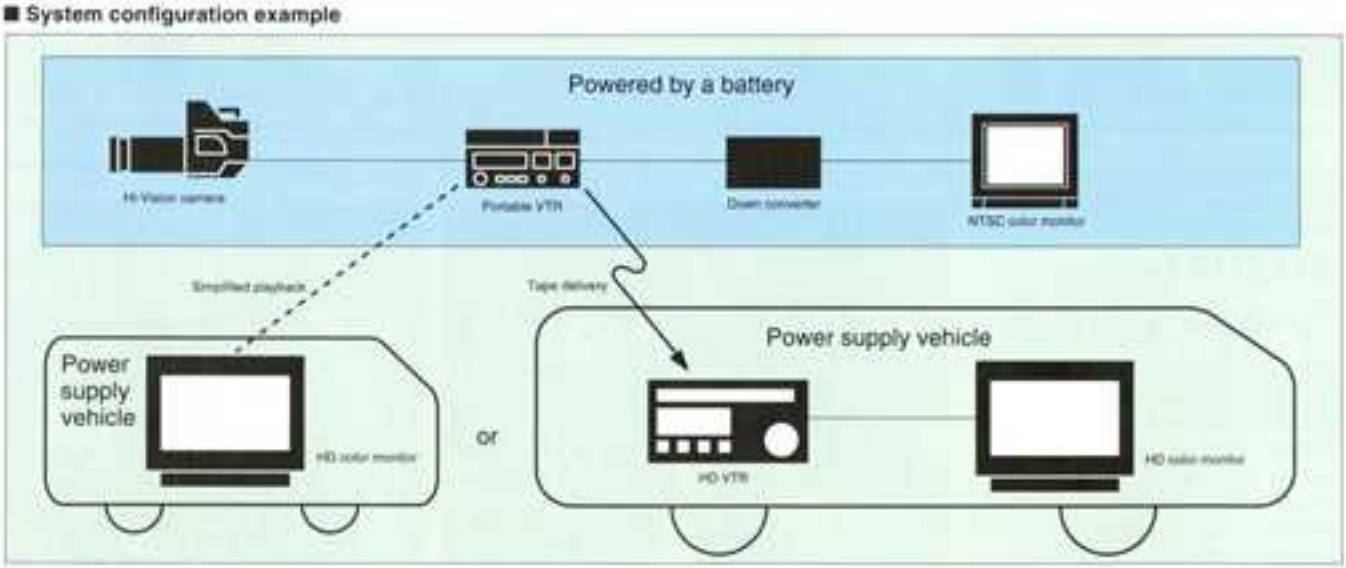
2/3" 2-million-pixel CCD Camera

Portable VTR

Peripheral equipment for 2/3" 2-million-pixel CCD Hi-Vision camera



■ **System configuration example**



Advanced all-digital Hi-Vision production system with switcher and DVP

Hi-Vision Production System

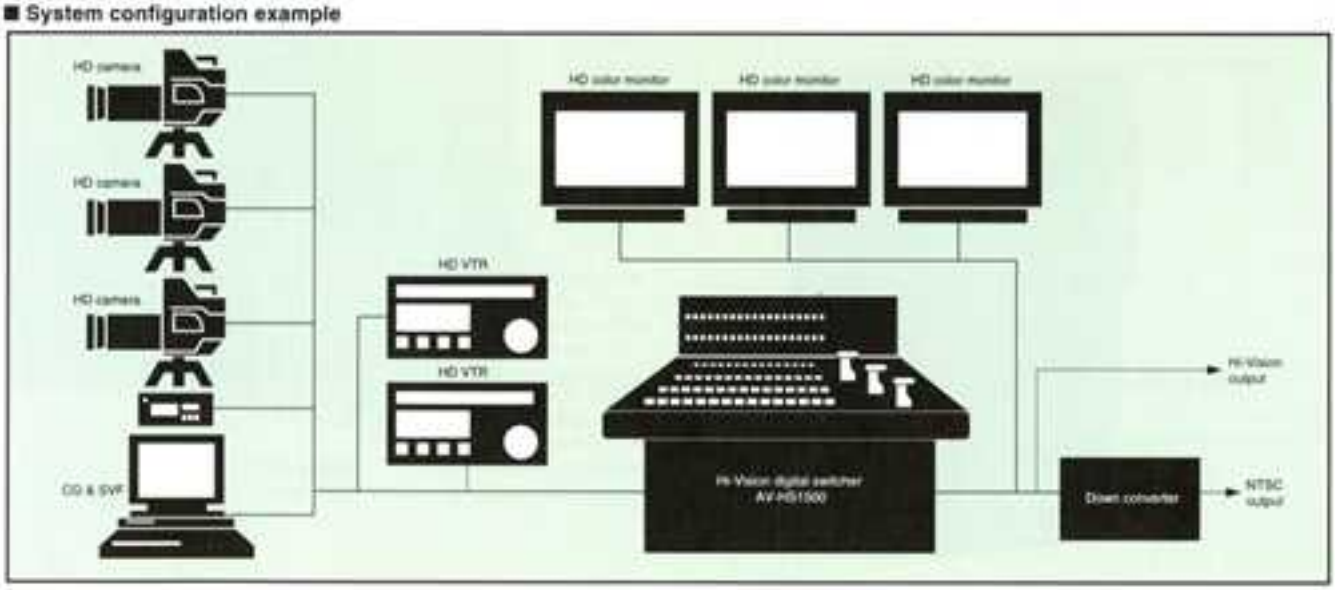
Superior image quality and advanced functions meet in a system that offers efficient production of high-quality Hi-Vision programs. The system features an innovative new Hi-Vision digital switcher that allows 10-bit processing for everything, including DA/AD input and output conversion. The switcher also combines with an advanced DVP (digital video processor) that features a wealth of digital 3-dimensional special effects.
The many visual effects possible with this Hi-Vision Production System give free rein to a visual artist's creativity. This easily expandable system also allows simultaneous production of programs in the current NTSC broadcasting format (with 4:3 aspect ratio).

▲ Selected for use by NHK, Panasonic's Hi-Vision Production System combines superb quality with easy operation to answer the demands of today's visual artists.

- Extensive use of advanced, newly developed VLSIs results in a compact system with low power consumption.
- Switch between 16:9 and 4:3 modes, or use both simultaneously. The system operates as a 3MK switcher when used in a single mode, and as a 2MK switcher (transferable) in simultaneous mode.
- Linked control of Hi-Vision and NTSC superimposition.
- Superimposition with 3-input NAM and external key input.
- Chroma key allows key output/color deletion video output.
- Last-line next-preview function.
- Three-dimensional DVP allowing special effects such as 3D rotation, page turn, and defocusing can be integrated into 2 channels.
- Wide expandability; even adapts to future serial standards.

▲ Hi-Vision OB van system used by NHK.

■ **System configuration example**



High Definition Display Equipment

Panasonic's 3rd-Generation MUSE Decoder Takes Picture Quality to New Heights

Type-36 Hi-Vision TV TH-36HV30

- Incorporates a full-specification MUSE decoder for enhanced Hi-Vision pictures.
- Equipped with MUSE AI for improved gradation and color reproduction.
- Receives full-specification signals of wide-screen Clear-Vision broadcasts. Built-in ghost reduction circuit minimizes ghosts.
- Self-Wide Function automatically adjusts to optimum wide-screen mode depending on the video source.

Type-32 Hi-Vision TV TH-32HV40

- Incorporates Panasonic's 3rd-generation MUSE decoder for a new level of image quality in Hi-Vision pictures.
- Equipped with MUSE AI for improved gradation and color reproduction.
- Receives full-specification signals of wide-screen Clear-Vision broadcasts. Built-in ghost reduction circuit minimizes ghosts.
- Self-Wide Function automatically adjusts to optimum wide-screen mode depending on the video source.
- Built-in Teletext broadcast decoder allows separate display of pictures and text.

Type-28 Hi-Vision TV TH-28HV40

- Incorporates Panasonic's 3rd-generation MUSE decoder for a new level of image quality in Hi-Vision pictures.
- Equipped with MUSE AI for improved gradation and color reproduction.
- Receives full-specification signals of wide-screen Clear-Vision broadcasts. Built-in ghost reduction circuit minimizes ghosts.
- Self-Wide Function automatically adjusts to optimum wide-screen mode depending on the video source.
- Built-in Teletext broadcast decoder allows separate display of pictures and text.

High Definition Display Equipment

High-Resolution Projectors Deliver Bright Images from All Sources — from Hi-Vision Broadcasts to Computer Images

Multimedia-Compatible HD 6-Tube Projector

Rear-projection type
(cabinet color: black)
Type-110: TH-H1190RW
Type-150: TH-H1590RW
Type-200: TH-H2090RW

Front-projection type
(cabinet color: ivory; CW: ceiling type; FW: floor type)
Type-150: TH-H1590CW/FW
Type-200: TH-H2090CW/FW
Type-250: TH-H2590CW/FW
Type-300: TH-H3090CW/FW

- High brightness level with optical output of 1,800 lumens (peak), and high horizontal resolution of 1,000 TV lines.
- High-performance short-focus lens requires considerably shorter projection distance.
- Six-tube system for a remarkable improvement in color shift.
- Connection of optional scan converter allows use as a computer display device.
- Equipped with control input/output terminals that improve picture quality according to the input signal.

Multimedia-Compatible HD Projector

Rear-projection type
Type-70: TH-H790R
Type-90: TH-H990R
Type-110: TH-H1190R
Type-150: TH-H1590R
Type-200: TH-H2090R

Front-projection type
(C: ceiling type; F: floor type)
Type-110: TH-H1190C/F
Type-150: TH-H1590C/F
Type-200: TH-H2090C/F
Type-250: TH-H2590C/F

- Large-diameter CRT with electromagnetic focusing system and short-focus lens provide high brightness level with optical output of 1,000 lumens (white peak) and high horizontal resolution of 1,100 TV lines.
- High-performance short-focus lens requires considerably shorter projection distance.
- Connection of optional scan converter allows use as a computer display device.
- Equipped with control input/output terminals that improve picture quality according to the input signal.

Multimedia-Compatible Type-70 Integrated HD Projector
TH-H790K

- High brightness level of 700 cd/m² (at 200 ft-L, peak), and high horizontal resolution of 1,000 TV lines.
- Fine-pitch black-stripe screen provides wider viewing angle and high contrast.
- High-performance short-focus lens enables a spacing-saving depth of 145 cm for flexible installation.
- Connection of optional scan converter allows use as a computer display device.
- Equipped with control input/output terminals that improve picture quality according to the input signal.

Scan Converter for H90-Series Projectors TW-HDS300

- Connects to H90-series projectors and converts the video output (15 to 72 kHz) of personal computers and workstations to a 67.5 kHz signal for high-definition multimedia applications.
- Equipped with a registration function for up to 30 computer models, and an automatic model detection function.

High Definition Display Equipment

High-Definition Multi-Vision System for High-Quality, Large-Screen Presentations

Multi-Vision System
HD-BIG12

- Large image display on 12 Panacube (VP) units (approx. type-160 large-screen).
- High brightness level of 2,120cd/m2 (single screen) provides a clear, easy-to-see picture even in brightly lit places.
- System configuration enables plug-and-play installation.

Hi-Vision Image Enlarger Unit
TW-SMP34H (for 12-screen systems)

- Divides single-screen signals into 12-screen signals, and feeds 12 Panacube (VP) units for enlarged high-definition multi-vision pictures.

Color Monitors Offer High Picture Quality and Advanced Functions for Professional Use

Type-32 Hi-Vision Master Monitor TM-3215HD

- High-definition picture tube with 0.36-mm dot-trio pitch for high horizontal resolution of 1,000 TV lines (at screen center).
- Equipped with automatic convergence adjustment for a stable picture and high performance for even the most demanding professional applications.
- The optional auto set-up unit automatically adjusts white balance.

Type-32 HD Color Monitor TM-3250HD

- New Super-Flat picture tube for high horizontal resolution of 640 TV lines (from Hi-Vision signal).
- Automatic tracking for horizontal scanning frequency of 15.5 to 50 kHz and vertical scanning frequency of 50 to 120 Hz.
- Equipped with "Multi" terminal, enabling external control of input switching.
- Equipped with ID assignment function and system control terminal for simultaneous and independent control of multiple TM-3250HD units.

Type-28 HD Color Monitor TM-2850HD

- New Super-Flat picture tube for high horizontal resolution of 640 TV lines (from Hi-Vision signal).
- Automatic tracking for horizontal scanning frequency of 15.5 to 50 kHz and vertical scanning frequency of 50 to 120 Hz.
- Equipped with "Multi" terminal, enabling external control of input switching.
- Equipped with ID assignment function and system control terminal for simultaneous and independent control of multiple TM-2850HD units.

Type-20 Hi-Vision Color Monitor TM-2020HD

- High-definition picture tube with 0.32-mm dot pitch provides bright, clear pictures.
- Exclusively designed as a video monitor for checking Hi-Vision images for production and other professional applications.
- Compact design, standard rack mounting.

High Definition Source Equipment

State-of-the-Art Panasonic Receiver System for Faithful, High-Quality Images from Hi-Vision Broadcasts

Parabola DBS Antenna
TA-BS7075 (type 75)/TA-BS7100A (type 100)

- Built-in DBS converter features low-noise HEMT element.
- FRP reflector is formed into shape by the SMC method for superb radio wave reflection efficiency and weather resistance.
- Converter arm is galvanized with a zinc solution for high resistance against salt damage.

TV Tuner TU-AHD100N

- Built-in full-specification MUSE decoder includes Panasonic's original Hi-Vision LSI.
- Equipped with MUSE AI for enhanced picture depth and detail.
- Superheterodyne system minimizes signal disturbance and interference, and offers stable signal reception for high-quality pictures.

Compact, Lightweight 1/2" Hi-Vision VTR for Use in Events and High-Definition Recording

1/2" Hi-Vision Video Recorder AU-HD1500

- Compact, lightweight one-piece design with 6U size for 19-inch rack mounting.
- Low power consumption (approx. 400 W) for event and outdoor recording applications.
- AT (auto tracking) mechanism for high-quality, noiseless slow-motion playback at 0 to +1x normal speed.
- Four PCM channels and one linear (analog) audio channel deliver high sound quality.
- Built-in time code generator/reader enables high-precision editing and searching.

This recording system complies with the 1/2-inch cassette tape format jointly developed by the NHK Engineering Service and ten other Japanese companies. Therefore, it can play back any cassette tape recorded in this format.

W-VHS VTR Records and Plays Hi-Vision Signals

Hi-Vision Video Recorder NV-WV10

- HD mode allows recording and playback of Hi-Vision broadcasts on W-VHS cassette tape.
- When connected to a Panasonic Hi-Vision TV, the TV control function allows easy timer recording of Hi-Vision broadcasts.
- SD mode allows recording and playback of conventional broadcasts with higher than S-VHS picture quality (when using a W-VHS video cassette tape).
- Conventional broadcasts can also be recorded and played back using S-VHS and VHS cassette tapes.

MUSE System Hi-Vision LD Player with 1,125 Scanning Lines

Hi-Vision LD Player LX-HD20

- Equipped with a new type of TBC for stable reproduction of high-definition pictures.
- 32.4-MHz oversampling faithfully reproduces high-quality images from Hi-Vision LDs.
- Advanced digital technology enables playback of conventional NTSC LDs with improved image quality.
- Superb basic performance includes high-speed auto reverse and high-precision signal reading.

High Definition Signal Control Equipment

Multi-Function System Adaptor Flexibly Controls Video Sources While Saving Space and Costs

HD Multi-Function System Adaptor
TW-HSA300

- Adapts to a variety of video sources, ranging from HDTV to all NTSC broadcast and video signals.
- Equipped with a matrix switcher, BS/CS/VHS/UHF tuner, MUSE decoder, and up converter.
- Saves space and costs, while offering easy operation.
- Full-matrix switching allows selection between four Hi-Vision outputs.

Wide-Bandwidth AV Switcher with 8-Input Capability

Wide-Bandwidth Signal Selector
TW-SWS80JA

- Signal selector with 8-input capability for multimedia applications.
- Connecting two TW-SWS80JA units allows simultaneous use of video equipment and computers with up to 15 different signal types.
- Equipped with video/S-video decoder (1 system).
- Eight-input/one select/two output terminals.

Signal Selector for Efficient System Configuration

Signal Selector with 6-Input Board Capability
TW-SWS62SX

- Slot board-in system allows the use of only the required input boards (optional) according to the type of video signal input, such as video, RGB and Hi-Vision.
- Optional boards: **TW-SBX62NTS** (Video/S-video input board), **TW-SBX62RGB** (RGB input board), **TW-SBX62HD** (Hi-Vision input board), **TW-SBX62PCD** (Computer signal input board: for DOS/V), **TW-SBX62PCM** (for Macintosh), **TW-SBX62PCP** (for PC-98), **TW-SBX62WSS** (for Sun/Panastation)

Processor with a Variety of Effects for Still Picture Playback

HD Still Picture Processor TW-HVS700

- Equipped with a variety of effects, including cut, dissolve, vertical/horizontal scroll and wipe.
- Connects with up to 14 video and audio disc drives.
- Optional scan converter board accommodates multimedia personal computers.
- Optional A/D board allows still pictures to be recorded from the video signal of a Hi-Vision camera and VTR.

High Definition Production Equipment

2/3" 2-Million Pixel MFIT-3CCD Offers the Highest Resolution in the Industry

Hi-Vision 3CCD Camera AK-HC800 (Camera Head)

- Horizontal CCD with single-channel high-speed 74-MHz transfer system and high-precision pixel shift processing provides maximum resolution of 1,200 TV lines and amplitude modulation of 45% or higher.
- Newly developed 2/3" 2-million pixel MFIT-CCD offers superb basic performance (sensitivity: 2000-lux F8; S/N ratio: 54 dB; D range: 600%; smear: 110 dB) exceeding 1" 2-million pixel systems.
- Compact dimensions, light weight and low power consumption bring extra convenience to field recording.
- Combines with an optical transmission adaptor and an RGB full-digital processing CCU to form a multi-functional EFT system with studio camera picture quality and functions.

Accessories

CCU (Camera Control Unit)
AK-HCU800

ROP (Remote Operation Panel)
AK-HRC100B

Compact, Separate-Type Hi-Vision Camera AK-HC80

- Compact, lightweight camera head weighs about 1.4 kg. Ideal for high-quality medical recordings, conferences and aerial shooting.
- Standard specifications allow camera-to-CCU distance of up to approx. 30 m.
- 1.3-million pixel 2/3" FIT-CCD for high horizontal resolution of 1,000 TV lines.
- Optional equipment includes lenses, remote control box (AK-HCB80), remote operation panel (AK-HRP100A), camera cable (3 m: AK-HCA80, 30 m: AK-HCA81).

Battery-Powered Portable VTR with Compact Dimensions, Light Weight and Low Power Consumption

Portable Hi-Vision Recorder (Dedicated-Recording) AU-HD1400

- First DC battery-powered Hi-Vision VTR.
- Compact, lightweight unit weighs about 24 kg, and uses only 100 W of power.
- Simplified playback function allows simultaneous playback during recording and on-location playback to check the recording status.
- Digital command (complies with BTA S-1005-A) allows the VTR to be controlled from the camera.
- Two PCM channels provide high-quality audio recording. Also equipped with one linear (analog) audio channel.
- Built-in time code generator for time code recording.

Advanced Digital HD VTR System for High-Quality Editing and Dubbing

Digital HD VTR AJ-D580HD
Digital HD VTR Processor AJ-HDP500

Special Order

- Broadcast-quality digital recording of Hi-Vision studio-specification signals.
- Accepts three sizes of compact 1/2" cassette tape: L (120 min), M (60 min) and S (30 min).
- Hi-Vision serial digital input and output allow video and audio signals to be transmitted via a single coaxial cable.
- High-quality 20-bit/48-kHz 4-channel digital audio and channel mixing. Also includes an analog cue track.
- AES/EBU digital audio input and output.
- Comes equipped with 9-pin serial (RS-422A), 50-p parallel and RS-232C remote interface.
- Noiseless slow-motion playback from –1 to +2x normal speed.

High Definition Production Equipment

Advanced Functions for High-Quality, Efficient Production, Editing and Transmission Meet Demanding Studio Needs

Hi-Vision Digital Switcher **AV-HS1500**

- 10-bit processing of all functions, including AD/DA input and output conversion. High-quality design allows the expansion of key sections to 16-bit processing.
- Newly developed VLSIs achieve compact dimensions and low power consumption.
- 16:9 and 4:3 modes can be switched or used simultaneously.
- 59.94 Hz/60 Hz selectable.
- 3 MK, 3 supers + 1 DSK, 3 wipes and 20-input switcher.
- SDI board inserts for serial standard applications.
- Links with an editor.
- A wide array of take-out functions, including AUX and super remote control.

Hi-Vision Sync Signal Generator **AV-4250**

- Complies with BTA S-001 standards.
- Extensive ICs enable compact dimensions and light weight.
- 3 sets of tri-level sync signal outputs, and HD/VD/BL/CLP signal output terminals.
- Optional color bar, multi-burst, sawtooth-wave test signal generation.

Hi-Vision Color Corrector **AV-4800**

- Corrects the level and gamma pedestal of the R, G and B signals.
- Enables set-up adjustment of total gain and chroma gain in addition to sync signal processing.
- Operation possible from remote control box.

Audio Equipment

Pro Audio Equipment Creates Quality Stereo Presence for Professional Use or Commercial Application

RAMSA Power Amp WP-1400A

- Rated output: 400 W + 400 W (4 ohms), 240 W + 240 W (8 ohms).
- Selectable modes: Stereo, Mono, BTL.
- Newly developed servo cooling system provides superb heat dissipation.
- VI limiter protects output transistors from overload.
- Class-H system delivers high output efficiency.

RAMSA 4-Bus Mixer
(8 mono inputs, 4 stereo inputs, 4 groups, 4 AUXs, 2 masters)
WR-S4412SA

- 4 groups and 4 AUX, L/R masters.
- 4 sets of stereo inputs with A/B input selector allow connection of up to 8 stereo units.
- High-precision, long-life 100-mm MRP fader for accurate level control.
- Separate grounding eliminates hum and noise.

RAMSA Compact High-Power Speaker
WS-A500 (K: gray; W: white)

- Allowable input: 200/100 W (continuous program/RMS); input impedance: 8 ohms; frequency response: 70 Hz to 20 kHz.
- Powerful 30-cm woofer for bass sounds, and twin-Bessel horn with accurate directional control for middle- and high-frequency sounds.

RAMSA Compact Subwoofer
WS-A550 (K: gray; W: white)

- Allowable input: 400 W (RMS); input impedance: 8 ohms; frequency response: 30 to 500 Hz.
- Reproduces powerful bass as low as 30 Hz when combined with the **WS-SP2A** processor.

RAMSA Near-Field PA Speaker
WS-A35

- 2-way bass reflex system with 16-cm woofer.
- Original 90° round WG horn delivers low distortion and high directional control.
- High sound quality for both voice and music reproduction.

■ Specifications

Hi-Vision TV		TH-36HV30	TH-32HV40	TH-28HV40
Power Source		AC 100V, 50/60Hz	AC 100V, 50/60Hz	AC 100V, 50/60Hz
Power Consumption		255W (3.5W in stand-by mode)	220W (5W in stand-by mode)	210W (5W in stand-by mode)
Picture Tube		Type-36 Super Flat Hi-Vision	Type-32 Super Flat Hi-Vision	Type-28 Super Flat Hi-Vision
Screen Area (H × V)		750 × 422mm (860mm diag.)	662 × 373mm (760mm diag.)	575 × 324mm (660mm diag.)
Audio Output (max.)		12W + 12W (EIAJ)	12W + 12W (EIAJ)	12W + 12W (EIAJ)
Speakers		Hexacone Dome speakers (10cm round woofer × 2, 3.5cm round tweeter × 2)	Hexacone Dome speakers (8 × 12cm oval type × 2)	Hexacone Dome speakers (8 × 12cm oval type × 2)
Terminals	TV/Video	Video In × 3, S1 Video In × 3 Monitor Out, S1 Video Out, Headphone Jack, VTR System Terminal	Video In × 3, S1 Video In × 2, S2 Video In × 1 Monitor Out × 1, S1 Video Out, Headphone/Earphone Jack, Family Earphone Jack, VTR System Terminal	
	DBS	BS-IF In/BS Extension In, Detection Out/Bit Stream Out MUSE Extension: AFC In × 1, Out × 2 Detection In × 2, Out × 1 Bit Stream Out × 1	BS-IF In/BS Extension In, Detection Out/Bit Stream Out MUSE Extension: AFC In × 1, Out × 1 Detection In × 1, Out × 1 Bit Stream Out × 1	
	HD	HD Video In (Video: Y,PB,PR; Audio: L/R/C/S), HD Monitor Out (Video: Y,PB,PR; Audio: L/R/C/S) MUSE Input × 2	HD Video In (Video: Y,PB,PR; Audio: L/R/C/S) HD Monitor Out (Video: Y,PB,PR; Audio 1/2: L/R/C/S) MUSE Input × 2	
Dimensions (W × H × D)		887 × 615 × 584cm	800 × 549 × 543 mm	705 × 492 × 510mm
Weight		70kg	50kg	44.3 kg

	HD 6-Tube Projector	HD 3-Tube Projector	Type-70 Integrated HD Projector
Power Source	AC 100V, 50/60Hz	AC 100V, 50/60Hz	AC 100V, 50/60Hz
Power Consumption	2000W	1000W	1000W
Projection Tubes	Type-12 Liquid-cooled high-brightness electromagnetic-focusing projection tubes (Neck diameter: 36.5mm)		
Lenses	F1.1 Short focal length, Direct optical coupling		
Luminous Output	1600 lumens (peak) 900 lumens (whole white)	1000 lumens (peak) 500 lumens (whole white)	—
Resolution	1000 TV lines (center) 800 TV lines (periphery)	1100 TV lines (center) 900 TV lines (periphery)	1000 TV lines (center) 800 TV lines (periphery)
Projection Size	Rear: type 110/150/200 Front: type 200/250/300	Rear: type 70/90/110/150/200 Front: type 110/150/200/250	Screen size: type 70 1540 × 866mm (16:9)
Video Bandwidth	70MHz (30MHz at Hi-Vision input)		
Horizontal Frequency	31.25/31.5/33.75/67.5kHz		
Vertical Frequency	50 to 120Hz		
Dimensions	Type-300 ceiling/floor type W: 1380/1460mm (Dimensions differ from model number to model number) H: 1489/1515mm D: 1250/1280mm	Front (C/F)/Rear (R) W: 1200/1200mm H: 584/428mm D: 1055/1041mm	W: 1700mm H: 2048mm D: 1450mm
Weight	Ceiling: 525kg (VP: 380kg, stand: 145kg) Floor: 495kg (VP: 380kg, stand: 115kg)	Front (C/F)/Rear (R) 191/190kg	510kg (VP: 190kg, cabinet: 320kg)
Terminals			
Signal Input	Y,PB,PR or analog RGB input terminals, 1 set, BNC connectors G/Y: 0.7Vp-p, 75 Ω; 1.0Vp-p, 75 Ω (including sync); B/PB: 0.7Vp-p, 75 Ω R/PR: 0.7Vp-p, 75 Ω; H(H/V): 0.3 to 4.0V, 75 Ω; V: 0.3 to 4.0Vp-p, 75 Ω		
Remote	Remote 1 input: D-sub 25P RS-232C connector (for installation adjustment and maintenance) Remote 2 input/output: M3 jack × 2 (for wired remote control, sensor box and serial control)		
Control Signal In/Out	Switcher control: D-sub 15P (for TW-SWS80JA/TW-HDS300 connection) ACC in/out: D-sub 9P × 2 ACC sensor in/out		

Scan Converter TW-HD5300	
Power Source	AC 100V, 50/60Hz
Power Consumption	300W
Terminals	Analog RGB Input Terminals (BNC, RGB/YPBPR) × 1 Scan: Non-interlace/Interlace, Clock frequency: 120MHz (non-interlace)/60MHz (interlace), Horizontal frequency: 15 to 72kHz, Vertical frequency: 50 to 120Hz, Number of dots: 1280 dots max. (H) × 1024 lines max. (V), 120MHz (non-interlace), H dots × V lines = 1000000 max. (interlace) Analog RGB Output Terminals (BNC, RGB/YPBPR) × 2 Scan: Non-interlace; Clock frequency: 50 to 120MHz; Horizontal frequency: 67.5kHz; Vertical frequency: 60.59/66.31/72.50/79.32/86.54/94.40/102.90Hz; Number of dots: 1280 dots max. (H) × 1024 lines max. (V) Signal Selector In/Out Terminals (D-sub 15P), Remote Terminal (D-Sub 25P)
Dimensions (W × H × D)	480 × 280 × 442mm
Weight	21kg

Type 70 Integrated HD Projector	
Projection System	3-tube rear projection, 1-mirror
Brightness	700cd/m² (200 ft-L) at white peak
Contrast	35 : 1 (1% black window)
Viewing Angle	Horizontal: ±55°, Vertical: ±20°
Screen	Lenticular pitch: 0.72mm, Gain: 3.5 2-piece screen (fresnel/lenticular)

Hi-Vision Image Enlarger TW-SMP34H	
Power Source	AC 100V ±10%, 50/60Hz
Power Consumption	210W
Screen Configuration	3 × 4 (12 screens)
Terminals	Video input (YPBPR or RGB) × 1, BNC, HDTV-standard signal (fh: 33.75kHz, fv: 60Hz) Video output (R,G,B,HD,VD) × 12, BNC, RGB signal (fh = 31.5kHz, fv = 59.94Hz)
Dimensions (W × H × D)	480 × 354 × 450mm
Weight	31kg

Type 32 Hi-Vision Master Monitor TM-3215HD	
Power Source	AC 90 to 132V, 50/60Hz
Power Consumption	370W (450W max.)
Picture Tube	Type 32 high-resolution picture tube, 90° deflection angle, in-line gun, dot type shadow mask, dot pitch 0.36mm
Effective Screen Area	664 (H) × 374 (V)mm (762mm diagonal)
Dimensions (W × H × D)	802 × 615 × 691mm
Weight	103kg
Terminals	LINE A/B In/Out (YPBPR/RGB select): 2 sets (BNC) R,G,B: 0.7Vp-p, positive, Y: 1.0Vp-p (with tri-level sync); PB,PR: ±0.35Vp-p, positive; Impedance: high impedance or 75 Ω EXT SYNC: 1 set (BNC) SYNC: 0.3Vp-p, negative ±0.35Vp-p tri-level sync; HD/VD: 4.0Vp-p, negative; Impedance: High impedance or 75 Ω Return loss: more than 46dB (6MHz), more than 26dB (30MHz)
Video Line Characteristics	Frequency response: 60Hz to 20MHz (within ±1dB), 20MHz to 30MHz (within +1dB, -3dB), more than 30MHz (lowering characteristics); Waveform distortion: sag: less than 2%, overshoot: less than 10% (square wave of 10nsec rise time), streaking: less than ±3%; Contrast adjustment range: -6dB to +6dB; Aperture compensation: 0 to 10dB (7/16/22MHz selectable)
Deflection and High Voltage	Deflection distortion: linearity: less than ±3% (H), less than ±1.5% (V), geometrical: less than±1.5%; Retrace time: less than 3.7μsec (H), less than 650μsec (V); High voltage: 31.5kV ±0.3kV; High voltage regulation: less than ±1% (beam current: 0 to 1mA, static); Convergence: less than 0.5mm at center, less than 0.7mm at periphery; Standard luminous output: more than 200cd/m² (at white peak), 70cd/m² (at whole white)
Rating	Resolution: horizontal: more than 1000 TV lines (at center), more than 950 TV lines (at periphery), vertical: more than 750 TV lines Picture size: OVER: 3% overscan, UNDER: 2% underscan Color temperature: 6500K/9300K/3200K/user preset (selectable)
Input Signal	1125i/525p/1250i

HD Color Monitor	TM-3250HD	TM-2550HD
Power Source	AC 100V ±10%, 50/60Hz	
Power Consumption	260W	
Audio Output	8W (4W + 4W)	
Speakers	Stereo Dome speakers (8 × 12cm oval type × 2)	
Picture Tube	Type 32, dot pitch 0.7mm	Type 28, dot pitch 0.65mm
Resolution	RGB signal input: 800 × 600 dots Video signal input: 550 lines (NTSC), 640 lines (HD)	
Screen Area (H × V)	66.2 × 37.3cm (76 cm diag.)	57.5 × 32.4cm (66 cm diag.)
Scanning Frequency	Horizontal: 15.5 to 50kHz, Vertical: 50 to 120Hz	
Color System	4-system (NTSC/PAL/SECAM/NTSC 4.43)	
Terminals	RGB A/B IN: YPBPR/RGB (BNC), Y: 1Vp-p including sync, PB/PR: ±0.35Vp-p (75 Ω or high impedance); R,G,B: 0.7Vp-p (positive/negative), HD/SYNC-VD: ±0.3 to 4.0Vp-p (positive/negative) (75 Ω or high impedance); Audio L,R (RCA pin): 0.5Vrms (22kΩ) RGB B OUT: YPBPR/RGB (BNC, bridge connection with input terminals), Y: 1Vp-p including sync, PB/PR: ±0.35Vp-p (75 Ω or high impedance); R,G,B: 0.7Vp-p (positive/negative), HD/SYNC-VD ±0.3 to 4.0Vp-p (positive/negative) (75 Ω or high impedance); Audio L,R (RCA pin): 0.5Vrms (22kΩ) LINE IN: Video (BNC): 1Vp-p including sync, 75 Ω, S-Video: Y: 0.7Vp-p (75 Ω), C: 0.286Vp-p (75Ω); Audio L,R (RCA pin): 0.5Vrms (22 kΩ) SYSTEM CONTROL IN/OUT (RCA pin) MULTI: Multi (high density D-sub 15P), Audio 0.5Vrms (RCA pin)	
Dimensions (W × H × D)	800 × 549 × 543mm	705 × 492 × 510mm
Weight	58kg	44kg

Type 20 Hi-Vision Color Monitor TM-2020HD	
Power Source	AC 100V, 50/60Hz
Power Consumption	132W
Picture Tube	Type 20, 90° deflection angle, high-definition, dot pitch 0.32mm
Horizontal Frequency	31.5 to 33.75kHz
Vertical Frequency	60Hz
Terminals	LINE A In/Out (YPBPR/RGB selectable) YPBPR in/out (BNC) × 1, RGB in/out (BNC) × 1 LINE B In/Out (YPBPR/RGB selectable) YPBPR in/out (BNC) × 1, RGB in/out (BNC) × 1 Ext. Sync In/Out (BNC)
Dimensions (W × H × D)	448 × 414 × 511mm
Weight	30kg

DBS Antenna	TA-BA7075	TA-BS7100A
Frequency Range	11.71398 to 12.00950GHz	
Polarization	Right-hand oriented circular	
Antenna Diameter	75cm	100cm
Antanna Gain	more than 37.4dBi	more than 39.0dBi
Noise Figure	less than 1.5dB	less than 1.5dB
Output Frequency	1035.98 to 1331.50MHz	
Overall Converter Gain	more than 48 ±4dB	more than 48 ±4dB
Dimensions (W × H × D)	790 × 907 × 874mm	1016 × 1067 × 1098mm
Weight	10kg	17kg

TV Tuner TU-AHD100N	
Power Source	AC 100V, 50/60Hz
Power Consumption	100W (4W in standby mode)
Tuner Receiving channels:	PLL frequency synthesizer tuning; VHF 1 - 12, UHF 13 - 62, BS 1 - 15
Terminals TV/Video	Video input × 1: S1 video (Mini-DIN 4P), video (RCA pin), audio (RCA pin, L/R) Video output × 1: S1 video (Mini-DIN 4P), monitor (RCA pin), audio (RCA pin, L/R/C/S) U/V antenna input
DBS	BS-IF input/DC output (15V) for converter, DBS extension input, Bit stream input, Detection output
HD	MUSE input (RCA) × 3, MUSE extension: AFC input × 1, Detection in/out × 1 , Bit stream out × 1, HD video input (RCA, YPBPR) × 1, HD monitor output (RCA, YPBPR) × 1
Projector	Projector output (BNC, 31.5/33.75kHz) × 1
Others	3-1 stereo detection out (M3 jack), Digital audio out, VP control out (D-sub 25P), System control in (9P), Screen control out (9P), HA control out
Dimensions (W × H × D)	430 × 142 × 420mm
Weight	11kg

1/2-inch Hi-Vision VTR AU-HD1500	
VIDEO	
Television System	Hi-Vision signal: 1125 lines, 60 fields
Recording System	Y/C time compressed multiplexing (C line sequencial), 2-ch FM recording
Bandwidth	Y: 20MHz, C(PB,PR): 7MHz
S/N	Y: more than 41dB, C: more than 47dB
AUDIO	
PCM (4ch, 48kHz, 16 bit)	Frequency response: 20 to 20000Hz, Dynamic range: more than 85dB, Distortion: less than 0.05% (1kHz standard signal),
Linear (1ch)	Frequency response: 50 to 15000Hz, S/N: more than 47dB, Dynamic range: better than 85dB, Distortion: less than 2% (1kHz standard signal),Wow & flutter: less than 0.05%
INPUT/OUTPUT	
Video	Y: 1 Vp-p/75 Ω (BNC), including tri-level sync; PB,PR: 0.7Vp-p/75 Ω (BNC), including tri-level sync, V,PB,PR or GBR selectable G,B,R: 1 Vp-p/75 Ω (BNC), including tri-level sync
Audio	Main audio: +4dBm, 4CH (XLR3F), Aux audio: +4dBm, 1CH (XLR3F), Monitor audio (ouput only): +4dBm, 2CH (XLR3F), front panel selectable
Time Code	Input: 2.4 ±1.4Vp-p (XLR3), Output: 2.4Vp-p, low impedance (XLR3F)
Sync Signal	Tri-level sync: 0.6 Vp-p/75 Ω (BNC)
GENERAL	
Power Source	AC 100V, 50 – 60Hz
Power Consumption	400W
Recording System	4 rotary heads, 2-channel helical scanning system, 5400rpm
Tape	1/2" Hi-Vision cassette metal tape
Recording Time	63 minutes
Dimensions (W × H × D)	437 × 291 × 630mm
Weight	45kg

Hi-Vision Video Recorder NV-WV10	
Power Source	AC 100V, 50/60Hz
Power Consumption	49W (5W at power "off")
Recording System W-VHS Format S-VHS/VHS Format	 HD mode: 4 rotary heads; helical scanning system SD mode: 2 rotary heads; helical scanning system Time axis compression TCI signal FM recording 2 rotary heads, helical scanning system
Tape	W-VHS/S-VHS/VHS video cassette tape
Recording Time	W-VHS: HD mode: 3 hours max. (WT-180 tape) SD mode: 9 hours max. (WT-180 tape) S-VHS/VHS: 9 hours max. (ST-180 tape)
Television System	Hi-Vision signal: 1125 lines, 60 fields; NTSC signal: 525 lines, 60 fields
Terminals Video Audio DBS	Video in/out, S-Video in/out, HD video in/out Line in/out, Headphone Detection in/out, Bit stream in/out, AFC in
Dimensions (W × H × D)	476 × 148 × 366mm
Weight	9.5kg

Hi-Vision LD Player LX-HD20	
Signal Format	MUSE format, NTSC format
Usable Discs	MUSE laser disc 30cm, 20cm (CLV, CAV) NTSC laser disc 30 cm, 20cm (CLV, CAV)
MUSE Output	0.4Vp-p, 75 Ω
NTSC Output	Video: 1.0Vp-p, 75 Ω; S-Video: Y: 1.0Vp-p, 75 Ω, C: 0.286Vp-p
Audio Output	Digital audio out: 200mVrms (1kHz, - 20dB)
Digital Audio Output	Frequency response 4Hz to 20kHz (EIAJ), S/N: 115dB (EIAJ), Dynamic range: 99dB (EIAJ), Wow & flutter: below measurable limit, T.H.D.: 0.004% (EIAJ), 1kHz
Analog Audio Output	200mVrms (1kHz, 40% modulation)
Power Source	AC 100V, 50/60Hz
Power Consumption	68W (3W at power "off")
Dimensions (W × H × D)	470 × 142 × 419mm
Weight	14kg

HD Multi-Function System Adaptor TW-HSA300	
Power Supply	AC 100V, 50/60Hz
Power Consumption	17SW
Tuning System	Frequency synthesizer tuning
Receiving Channels	VHF: 1 - 12, UHF: 13 - 62, CATV: C13 - C35, BS: 1 -15, CS JCSAT 1 - 32/SCC 1 - 23/AUX 1 - 99
Terminals TV/Video DBS/CS HD Others	 Video input × 2: S-video (Mini-DIN 4P), video (RCA pin), audio (RCA pin, L/R) Video output × 1: S-video (Mini-DIN 4P), video (RCA pin), audio (RCA pin, L/R) U/V antenna input BS/CS-IF input/DC output (15V) for converter, BS extention input, Bit stream out, Detection out HD video input (BNC, YPbPR) + audio input (Canon) × 4, HD monitor output (BNC, YPbPR) + audio output (Canon) × 4 MUSE input (RCA pin) × 1, MUSE extension: detection out × 1, Bit stream out × 1 MUDE decoder audio output, External control (D-sub 9P/D-sub 25P), VP control out (D-sub 15P)
Dimensions (W × H × D)	430 × 400 × 500mm
Weight	33kg

Wide-Bandwidth Signal Selector TW-SWS80JA	
Power Supply	AC 100V, 50/60Hz
Power Consumption	30W
Frequency Response	Video 100MHz, Audio 20kHz
Terminals RGB In RGB Out Decoder In/Out Others	 Analog RGB input (BNC) × 8, Audio input (RCA pin, L/R/C/S) × 8 Analog RGB output (BNC) × 2, Audio output (RCA pin, L/R/C/S) × 2 S-Video/Video select: S-video input (Mini-DIN 4P) × 1, Video input (BNC) × 1, Analog RGB output (BNC) × 1 Control In/Out (D-sub 15P), Remote (D-sub 15P)
Dimensions (W × H × D)	430 × 177 × 400mm
Weight	18kg

6-Input Board Compatible Signal Selector TW-SWS625X	
Power Supply	AC 100V, 50/60Hz
Power Consumption	4.5W (without board) 40W (six TW-SBX62HD inserted)
Input Board Video/S-Video RGB Hi-Vision Computer Signal	 Video input (BNC) × 1, S-video input (Mini-DIN 4P) × 1, Audio input (RCA pin, L/R) × 1 RGB input (BNC × 5) × 1, Audio input (RCA pin, L/R) × 1 YPBPR input (BNC) × 1, Audio input (RCA pin, L/R/C/S) × 1 RGB input (D-sub 15P) × 1, Audio input (RCA pin, L/R) × 1
Output	LINE (video) output (BNC) × 2, RGB output (BNC × 5) × 2, Audio output (RCA pin, L/R/C/S) × 2
Dimensions (W × H × D)	430 × 138 × 350mm
Weight	7.5kg (without board) 9kg (six TW-SBX62HD inserted)

HD Still Picture Processor TW-HVS700	
Power Supply	AC 100V, 50/60Hz
Power Consumption	125W
Terminals	Ext. sync input (HD/VD/SYNC select): HD/VD input (BNC) × 1, SYNC input (BNC) × 1 Video output: RGB output (BNC) × 1, YPBPR output (BNC) × 1, HD/VD output (BNC) × 1, SYNC output (BNC) × 1 Control: SCSI, RS-232C
Option Slot	2 slots
Dimensions (W × H × D)	430 × 177 × 450mm
Weight	17kg

Hi-Vision 3CCD Camera AK-HC900 (Camera Head)	
Pick-up Element	2/3" 2-million pixel MFIT-CCD
Pick-up Method	RGB
Optical System	F1.4 prism
Optical Filter	CC: 3200K, 4700K, 5600K, 8000K ND: open, 1/4, 1/16, close Head: manual select, CCU: remote select
Sensitivity	FB: 2000 lux (white reflection: 89.9%)
S/N Ratio	54dB
Horizontal Resolution	1200 TV lines
Dimensions (W × H × D)	130 × 300 × 371mm
Weight	5.4kg
Power Consumption	25W

Compact Separate-type Hi-Vision Camera AK-HC80 (Camera Head, CCU)	
Pick-up Element	2/3" 1.3 million pixel FIT-CCD
Pick-up Method	Dual Green
Optical System	F1.4 prism
Lens Mount	2/3" bayonet mount
Video Output	G,B,R and Y,PB,PR (1 set each) (BTA S-001 standard Hi-Vision signal)
Sync Signal Output	±0.3Vp-p, 75 Ω, 1 set (BNC)
Ext. Sync Signal Input	±0.3Vp-p, 75 Ω, 1 set (BNC)
Sensitivity	2000 lux F5.0
S/N Ratio	50 dB
Horizontal Resolution	1000 TV lines
Dimensions (W × H × D)	Camera Head: 112 × 120 × 140mm, CCU: 420 × 95.5 × 305mm
Weight	Camera Head: 1.4kg, CCU: 6.1kg
Power Source/Consumption	AC 100V or DC 12V/42W

Hi-Vision Portable Video Recorder AU-HD1400	
VIDEO	
Television System	Hi-Vision signal: 1125 lines, 60 fields
Recording System	Y/C time compressed multiplexing (C line sequencial) 2-channel FM recording
Bandwidth	Y: 20MHz, C(Pb,Pr): 7MHz
S/N	Y: 40dB, C: 46dB
AUDIO	
PCM (2ch, 48kHz, 16 bit)	Frequency response: 20 to 20000Hz, Dynamic range: more than 85dB, Distortion: less than 0.05% (1kHz standard signal)
INPUT SIGNAL	
Video	Y: 1 Vp-p/75 Ω (BNC × 2, loop-through), PB,PR: 0.7Vp-p/75 Ω (BNC × 2, loop-through), Sync (BNC × 2, loop-through), Tri-level sync: 0.6Vp-p/75 Ω
Audio	+4/–20/–60dBm, 2ch (XLR3P) selectable
Time Code	2.4 ±1.4Vp-p (XLR3P)
GENERAL	
Power Source	DC 12V
Power Consumption	100W
Recording System	4 rotary heads, 2-channel helical scanning system, 5400rpm
Tape	1/2" Hi-Vision cassette metal tape
Recording Time	63 minutes
Dimensions (W × H × D)	360 × 205 × 558mm (including handle)
Weight	24kg

Digital HD VTR/HD VTR Processor AJ-D580HD/AJ-HDP500	
Video Bandwidth	Y: 30MHz, C: 15MHz
Audio Frequency Response	20Hz to 20kHz ±0.5dB
Dynamic Range	100dB
Recording Time	120 minutes max. (L cassette)
Power Source	AC 100 – 120V, 50/60Hz
Power Consumption	780W max. (total)
Dimensions (W × H × D)	VTR: 437 × 291 × 650mm, Processor: 424 × 102 × 550mm
Weight	VTR: 50kg, Processor: 14kg

Hi-Vision Digital Switcher AV-HS1500	
Input/Output Video Signal	Y,PB,PR
Input/Output Sync Signal	Tri-level sync
Frequency Response	Y: 60Hz to 20MHz: within ±0.2dB, 20 to 30MHz: within ±1.0dB, more than 30MHz: lowering characteristics, PB: 60Hz to 10MHz: within ±0.2dB, PR: 10 to 15MHz: within ±1.0dB, more than 15MHz: lowering characteristics
Waveform Characteristics	2T: less than 1% (Y), less than 3% (C), horizontal sag: less than 1%
Crosstalk	500Hz: less than ±60dB, 30MHz: less than –40dB
S/N (rated output)	quantization noise: less than –58dB p-p /rms, hum noise: less than –58dB p-p /rms
Level Deviation	within ±0.1dB (between signals)
Reflection Attenuation	30MHz: more than 20dB
Delay Time	within 2.5ns (between signals)
Power Consumption	3.0KVA
Dimensions (W × H × D)	main unit: 480 × 444 × 550mm (2 units), panel: 1200 × 200 × 650mm (subject to change on request)

Hi-Vision Color Corrector AV-4800	
Input Video Signal	Y,Pb,Pr/R,G,B
Input Sync Signal	Tri-level sync
Output Video Signal	Y,Pb,Pr/R,G,B
Output Sync Signal	Tri-level sync/Dual-level sync
Overall Gain Compensation	more than ±3dB
Chroma Gain Compensation	more than ±3dB
Set-up Compensation	+0.1 to –0.07V
RGB Gain Compensation	±30%
RGB Pedestal Compensation	±15%
RGB Gamma Compensation	±10%
Power Consumption	160VA
Dimensions (W × H × D)	main unit: 480 × 250 × 350mm, remote control box: 280 × 80 × 120mm

Hi-Vision Sync Signal Generator AV-4250	
Input Signal	Tri-level sync/Y signal
Output Signal	Tri-level sync, Dual-level sync, HD/VD/BL/CLP
Sync Combination Time	in an instant (H,V)
H. Phase Adjustment	more than ±2μs
V. Phase Adjustment	±3H
Combination Error	within ±1ns
Jitter	within ±1ns
Power Consumption	70VA
Dimensions (W × H × D)	480 × 100 × 430mm

RAMSA Power Amplifier WP-1400A	
Rated Output Power	400W + 400W (4 Ω, continuous output), 240W + 240W (8 Ω, continuous output)
BTL Output	800W (8 Ω, continuous output)
Frequency Response	20Hz to 20kHz, +0, –0.5dB (4 Ω, 1W output)
T.H.D. (both channels driven)	less than 0.3% (400W + 400W/4 Ω, 40Hz to 20kHz), less than 0.1% (240W + 240W/8 Ω, 1kHz)
Power Source	AC 100V, 50/60Hz
Power Consumption	1150W (4 Ω)/830W (8 Ω) at rated output
Dimensions (W × H × D)	480 × 146 × 394mm
Weight	17.4kg

RAMSA 4-Bus Mixer WR-S4412SA	
Frequency Response	+1dB/–2.5dB, 20Hz to 20kHz: Mono input – group out: + 4dBV-60dB in, 600 Ω, Stereo input – group out: +10dBV-20dB in, +4dB out, 600 Ω
T.H.D.	less than 0.1%, 20Hz to 20kHz: Mono input – group out: +4dB in/out, 600 Ω, Stereo input – group out: +10dB in, +4dB out, 600 Ω
Input Conversion Noise	less than –126dB, source impedance 150 Ω (audio band 22.4Hz to 22.4kHz)
Residual Noise	less than –90dB, group, aux, master, monitor output (audio band 22.4Hz to 22.4kHz)
Power Source	AC 100V, 50/60Hz
Power Consumption	40W
Dimensions (W × H × D)	650 × 171 × 585mm
Weight	19kg

RAMSA Speakers	WS-A500	WS-A550
Configuration	2-way, bass-reflex	Bass-reflex
Input Power	200W/100W (continuos, RMS)	400W (RMS)
Input Impedance	8 Ω	8 Ω
Frequency Response	70Hz – 20kHz (–20dB)	30Hz – 500Hz
Sound Pressure Level (1m/1W)	98dB	86dB (free space), 91dB (semi-free space)
Speaker Unit	30cm cone-type woofer, TB horn tweeter (60° × 40°)	30cm cone-type woofer
Dimensions (W × H × D)	395 × 557 × 272.5mm	395 × 557 × 272.5mm
Weight	17.5kg	17.5kg

RAMSA Speaker WS-A35	
Configuration	2-way, bass-reflex
Input Impedance	8 Ω
Input Power	140W/70W (continuos, RMS)
Sound Pressure Level	90dB (1m/1W)
Frequency Response	80Hz to 20kHz
Speaker Unit	16cm cone-type woofer, Round 90° WG horn tweeter (magnetically shielded)
Dimensions (W × H × D)	385 × 230 × 220mm
Weight	5.6kg

Dramatic Hi-Vision experience — 60 titles

Guide to Panasonic's Hi-Vision Software

Clear, powerful, true-to-life Hi-Vision images already provide extraordinary visual impact in a range of applications. With the popularity of Hi-Vision systems continuing to grow, Panasonic is making our Hi-Vision software available for free showings at art galleries, museums, libraries, schools, public halls and other cultural and educational facilities.
The wide selection of titles includes both moving pictures and still pictures. Please feel free to inquire further about Panasonic's Hi-Vision software.

■ Selected titles (examples)

Moving pictures

Kushiburu Kyo
Drama: 12 minutes
The unique aesthetics of traditional Japan come beautifully to life in these scenes from Kyoto.

Marine Flowers — Living Environments of the Coelenterates
Educational: 40 minutes
A telecine-transferred Hi-Vision program showing a fantastic look at how coelenterates (such as coral and jellyfish) live.

Gold of the Setting Sun — The Life of the Painter, Renoir
Drama: 30 minutes
Depicts the last day of French painter Pierre-Auguste Renoir, and poses the question of what is happiness. English version also available.

Life in the Earth
Environment: 17 minutes
The wild animals of Africa, as filmed in Tanzania's renowned Serengeti National Park.

The Centenary Test '92
Sports: 60 minutes
A memorable rugby match pitting New Zealand's famous All Blacks against a team of international stars.

Panasonic Children's Music Hall
"Picture Book of Songs" — The Sky above the Desk
Children: 15 minutes
Five original songs are accompanied by the cut-paper artwork of Kyoko Yanagisawa.

Still pictures

Kagiroi-no Sato Akino — One Day Fantasy
Environment: 10 minutes
Breathtaking scenery shot by photographer Shunju Yoshida, with music by Yoshitaka Azuma.

Women of Legends: The World of Noriyoshi Orai
Art: 11 minutes
Ventures into the mythological world created by master illustrator Noriyoshi Orai.

Star Stories: Japan's Constellations and Their Mythology
Educational: 19 minutes
Captivating for both children and adults, this shows Japan's constellations throughout the year and explains the underlying myths.

Sukiya: The Detached Palace at Katsura
Art: 13 minutes
Examines the essence of a structure whose timeless elegance remains close to the Japanese heart.

Dunhuang «Complete Version»
Educational: 10 minutes
Introduces Dunhuang, the world's largest storehouse of Buddhist art.

Pour la Lumière: Georges Rousse
Art: 17 minutes
A glimpse into the world of Georges Rousse, who drew pictures on ruins and took photos.

Some 60 titles (including the above) are available now as rentals. New titles are added from time to time.

• To rent software or for more information, please contact:
Panasonic Visuals Inc. Sumitomo Bank Kyobashi Building 4F, 2-4-20 Higashinoda-machi, Miyakojima-ku, Osaka 534
Tel (06) 882-4419 Fax (06) 882-4490

* Panasonic Visuals can also produce original video and audio software for you on request. Please contact us for more information.

For more information, please contact:

Matsushita Electric Industrial, Co., Ltd.
Corporate Public Institution
Sales Division
1-1-2 Shiba Koen, Minato-ku, Tokyo 105 (National Building No. 1)
Tel (03) 3431-8718

If you have questions about anything in this brochure, please contact the dealer listed to the left. If the dealer cannot answer your questions, please feel free to contact us directly.

The contents of this brochure are current and accurate as of March 1996.

* Due to limitations in the color printing process, actual product colors might vary slightly from those depicted in this brochure. Product specifications and designs are subject to change at any time without notice for purposes of product improvement.